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EXAMINER

SINGH, ANOOP KUMAR

ART UNIT PAPER NUMBER

1632

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/605,708

Applicant(s)

GONG ET AL.

Examiner

Anoop Singh

Art Unit

1632

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 17-19, 22-28, 33 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 20-21, 29-32 and 35-41 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/28/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

1. Applicant's election of claims 1-16, 20-21, 29-32 and 35-41 in the reply filed on January 19, 2006 is acknowledged. Claim numbering as filed in instant application from 1-41 is used for restriction requirement. The numbering of claims in parent application is irrelevant as instant claims were entered in the parent application. Thus, instant application meets the requirement of continuation application. It is noted that applicants required further clarification on restriction requirement of patentably distinct invention. In this regard, Examiner required election between patentably distinct inventions of transgenic fish made by different promoter (restriction/election requirement, pp 2, section 4). Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different mode of operation, different functions or effect (MPEP § 806.04, MPEP §808.01). In the instant case the different polynucleotide sequences represent unique and different promoter sequences with different inherent properties as demonstrated by a specific expression pattern in a specific cell type. Therefore, each transgenic fish comprising a different promoter would results in a material different genome in the transgenic fish. In addition, each promoter may result in specific and unique phenotype resulting in patentably distinct transgenic fish. Page 2 section 4 clearly states, applicants are required to elect one promoter for prosecution on merit and it was emphasized that it is a restriction requirement not election of species. The applicants election to muscle specific promoter is acknowledged.

The requirement is deemed proper and is therefore made FINAL.

Accordingly, a method of providing transgenic fish to ornamental fish market by obtaining an ornamental transgenic fish comprising one or more fluorescent gene operably linked to muscle specific promoter such that it expresses the fluorescence upon exposure to one or more blue light and distributing said fish in ornamental fish market will be examined in the instant application.

2. Claims 17-19, 22-28 and 33-34 have been have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction/election requirement in the reply filed on 1/19/2006.

3. The amendment filed on 1/19/2006 has been entered.

4. Claims 1-16, 20-21, 29-32 and 35-41 are pending.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-16, 20-21, 29-32 and 35-41 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of providing

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transgenic fish to the ornamental fish market comprising the step of (a) obtaining a transgenic zebrafish comprising a chimeric fluorescent gene operably linked to a muscle specific promoter selected from the list consisting of (i) zebrafish muscle creatine kinase gene promoter (SEQ ID NO: 8) such that said transgenic fish expresses fluorescent protein encoded by fluorescent gene in muscle, (ii) zebrafish fast skeletal myosin light chain 2 gene promoter (SEQ ID NO: 22) such that said transgenic fish expresses fluorescent protein encoded by fluorescent gene in skeletal muscle; at a level sufficient such that said transgenic fish fluoresces upon exposure to one or more light and (b) distributing said fish to the ornamental fish market, does not reasonably provide enablement for using any promoter or any other species of transgenic fish. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

In determining whether Applicant's claims are enabled, it must be found that one of skill in the art at the time of invention by applicant would not have had to perform "undue experimentation" to make and/or use the invention claimed. Such a determination is not a simple factual consideration, but is a conclusion reached by weighing at least eight factors as set forth in In re Wands, 858 F.2d at 737, 8 USPQ 1400, 2d at 1404. Such factors are: (1) The breadth of the claims; (2) The nature of the invention; (3) The state of the art; (4) The level of one of ordinary skill in the art; (5) The level of predictability in the art; (6) The amount of direction and guidance provided by

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Applicant; (7) The existence of working examples; and (8) The quantity of experimentation needed to make and/or use the invention.

These factors will be analyzed, in turn, to demonstrate that one of ordinary skill in the art would have had to perform "undue experimentation" to make and/or use the invention and therefore, applicant's claims are not enabled.

Furthermore, USPTO does not have laboratory facilities to test if an invention will function as claimed when working example are not disclosed in the specification, therefore enablement issues are raised and discussed based on the state of knowledge pertinent to an art at the time of the invention, therefore, skepticism raised in enablement rejections are those raised in the art by artisan of expertise.

Claims 1-16, 20-21, 29-32 and 35-41 are broad in scope. The following paragraph will outline the full scope of the claims. Claimed invention recites a method of providing transgenic fish to the ornamental fish market by obtaining an ornamental transgenic fish. Thus, in the instant case transgenic fish comprising a fluorescent gene has been analyzed. Claims 1-16 encompass a method of providing transgenic fish by obtaining transgenic fish comprising one or more chimeric fluorescent genes operably linked to a promoter such that transgenic fish expresses one or more fluorescent gene upon exposure to one or more light. Subsequent claims limit the wavelength and fluorescent gene to specific light wavelength and genes. Claims 16, 20-21 recite tissue specific promoter subsequently limiting to zebrafish muscle creatine kinase gene and zebrafish myosin light chain 2 gene promoter. Claim 29 limits the method of claim 16 to include more than one fluorescent protein color. Claim 30 limits the expression of color in same

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tissue to affect an original color. Claim 31 limits the fluorescent gene of claim 30 to include GFP and BFP. Claim 32 limits the method of claim 29 to include more than one fluorescent protein that are separately expressed in different tissues. Claims 36-41 limit the method of claim 1 to include stable transgenic fish line. These claims encompass plurality of fish species and any promoter that would be used for expressing fluorescent gene in fish. The disclosure provided by the applicant, in view of prior art, must encompass a wide area of knowledge to a reasonably comprehensive extent. In other word each of those, aspect considered broad must be shown to a reasonable extent so that one of the ordinary skills in the art at the time of invention by applicant would be able to practice the invention without any undue burden being on such Artisan.

The specification broadly discloses role of transgenic fish in medical research and method of introducing foreign gene in fish (pp. 3). The invention is based in part to develop fluorescent transgenic ornamental fish using fluorescent gene construct. The specification generally describes use of different gene promoters that could express plurality of fluorescent gene in different tissue (pp 7). Pages 9-15 provide brief description of drawing. Pages 15-47 provide detailed description of the invention, preferred embodiment, gene construct and general method to prepare fluorescent transgenic fish and other techniques disclosed in the instant application. Remaining specification describes the specific example of the ornamental transgenic carrying characteristics similar to one described in this office action. Example 1: of specification teaches isolation of muscle specific and ubiquitously expressed zebrafish cDNA clones. Example 2 discloses isolation of four-zebrafish gene promoter. Example 3 describes

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generation of green fluorescent transgenic fish. "It is noted that specification itself states that only two construct (2011 bp and 1338 bp) are capable of maintaining the high level of expression and highest expression was seen with only 2 -Kb promoter suggesting the importance of promoter region of 1338 bp to 2011 bp for conferring the highest promoter activity". Example IV discloses potential applications of fluorescent transgenic fish as ornamental fish.

The specification does not provide any specific guidance as to how transgenic fish in other species would be made. In fact, Applicant's examples only describe a transgenic zebrafish as claimed in the instant application. At the time of the invention, although many of the methods are routine, neither art of record nor the specification teaches how to practice the claimed invention for all different species of fish as recited in the claimed invention. It is noted that the specification as filed does not provide any specific information for practicing the claimed transgenic fish comprising fluorescent gene operably linked to any promoter. An artisan would have to carry out extensive experimentation to make and use the invention in other species with different promoters and such experimentation would have been undue because of the art of making ornamental transgenic fish using any promoter was unpredictable and specification fails to provide any guidance as to how the claimed method would have been practiced.

For example, Betancourt et al (Mol Mar Biol Biotechnol. 1993, 2(3): 181-8) state "elements from mammalian genes may not be properly recognized by the fish cellular machinery and in an unpredictable manner". It is noted that Betancourt et al suggest that vectors prepared to express foreign genes in transfected cultured fish cells and

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transgenic fish should preferably contain DNA sequences from fish genes or, alternatively, those sequences from mammalian genes that have been previously proved to be compatible with the fish cellular machinery (abstract). It is not apparent how the instant method of providing fish to ornamental fish market contemplates obtaining transgenic fish comprising fluorescent gene operably linked to any promoter sequence derived from any source. Bearzotti et al. (J Biotechnology. 1992, 26(2-3): 315-325) also suggest that the translation and secretion machinery of fish cells can express efficiently foreign genes but that mammalian intron might be not processed properly in some cases. Higashijima et al (Dev Biol. 1997; 192(2): 289-99; IDS) describe factors that potentially affect the transgenic frequency or expression levels. Higashijima et al state that (i) expression levels of GFP in the injected embryo are not strongly correlated to transgenic frequency; (ii) a plasmid vector sequence placed upstream of the construct might reduce the expression levels of the reporter gene. The specification does not provide any guidance as to how would an artisan select any promoter to express any fluorescent gene at any site in any fish. Therefore, at the time of the invention there was no evidence of expressing fluorescent gene at any site using any promoter in any fish and a method to make or obtain transgenic ornamental fish would have been unpredictable since a number of factors played role in the process of expressing transgene at a specific site as shown by the art of record.

In conclusion, in view of breadth of the claims and absence of a strong showing by Applicant, in the way of specific guidance and direction, and/or working examples demonstrating the same, such invention as claimed by Applicant is not enabled for the

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claimed inventions. The specification and prior art do not teach a method of providing transgenic fish to an ornamental fish market comprising the step of obtaining an ornamental fish comprising any fluorescent gene operably linked to any promoter that expresses said gene and distributing said fish to the ornamental fish market. An artisan of skill would have required undue experimentation to practice the method as claimed because the art of using any promoter for gene expression in general in fish was unpredictable at the time of filing of this application as supported by the specification and observations in the art record.

7. Claims 1-16, 29-32 and 35-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claimed inventions encompass a transgenic fish comprising a chimeric gene comprising of nucleic acid sequence encoding fluorescent protein operably linked to any promoter selected from any species. Subsequent claims include a tissue specific promoter subsequently limiting to a muscle specific promoter. In analyzing whether the written description requirement is met for the genus claim, it is determined whether a representative number of species have been sufficiently described by other relevant identifying characteristics, specific features and functional attributes that would distinguish different members of the claimed genus.

The specification describes one species, a sequence of a MLC2 promoter and a muscle creatine kinase (MCK) gene without giving any particular structure to function/activity relationship in this single disclosed species for use in the invention as recited. The specification also fails to disclose and clear guidance to any other sequence than the one specifically recited for MLC2 and MCK. In addition, the specification describes only MLC2 and creatine kinase as muscle specific promoter. It does not teach what motifs or domain would be essential for muscle specific promoter activity in different species.

The specification does not provide any disclosure as to what would have been the structure of the representative number of the species of the claimed broad genus as disclosed in specification. Applicant have required a promoter to provide gene expression, however the specification fails to provide the relevant identifying characteristics of any of the nucleic acid sequence of the gene that can be used in the instantly claimed invention. The skilled artisan cannot envision the detailed structure of other muscle specific promoters that must show the contemplated biological activity, and therefore, conception is not achieved until reduction to practice has occurred, regardless of the complexity/simplicity of the structure and/or methods disclosed in specification.

In conclusion, this limited information is not deemed sufficient to reasonably convey one skilled in art that Applicant was in possession of the claimed broad genus at the time the application was filed. Thus, it is concluded that the written description requirement is not satisfied for the claimed broad inventions.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-16, 20-21, 29-32, 35-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "ornamental transgenic fish" in claims 1 and 36 is not defined in the specification, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. It is not apparent which species of fish are included or excluded as ornamental transgenic fish that would be provided to ornamental fish market. Claims 2-15, 20-21, 29-32, 35-41 depend from claim 1.

Claims 1, 2, 7-16, 20-21, 29-32 and 36-41 are vague and indefinite because level of fluorescent expression will be relative to blue, ultraviolet and sunlight as recited in claim 1. The meets and bounds of the claims cannot be determined because it would depend on an artisan to define what he would consider "sufficient" and "method of detection of the fluorescence".

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 1-8, 16 and 36-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashijima et al (Dev Biol. 1997; 192(2): 289-99, IDS) and Bryan et al (US Patent no. 6436682 8/20/2002, filing date, 6/30/ 2000, effective filing date 3/ 27/ 1998).

Higashijima et al teach generating transgenic zebrafish using a β -actin-GFP construct. Higashijima et al show GFP is expressed throughout the body of one line whereas other two transgenic line showed identical spatial expression of GFP in muscle cells (pp 295, col. 1, para 2, Fig 4), demonstrating consistent expression of green fluorescence. It is also noted that Higashijima et al show stable transmission of GFP expression in three lines of F3 generation suggesting that transgene is stably integrated into the genome of each line (pp 297, col. 1, para 1). It is also disclosed that fluorescence expression could be seen with FITC filter suggesting that fluorescent expression on fish could be best viewed at excitation wavelength of blue light (360-420

nm) (pp 292, col.2, para 2). However, Higashijima et al do not teach distributing the transgenic fish to the market.

Bryan et al teach a combinations containing a first composition containing a luciferase and a second composition containing one or more additional components of a bioluminescence-generating system for use to produce novelty items. These novelty items also include transgenic fish, particularly transgenic fish that express a luciferase (col. 8, line 16). It is noted that these novelty items are designed for entertainment, recreation and amusement including use of the item to attract attention (col. 8, lines 25-29). Bryan et al also disclose that such uses of the novelty item may in the place of normal or ordinary uses of such an item (col. 8, line 33). Thus, teachings of Bryan et al encompass displaying fluorescent transgenic fish at ornamental fish market. However, Bryan et al do not specifically teach obtaining ornamental transgenic fish comprising a promoter operably linked to a fluorescent gene.

It would have been obvious for one of ordinary skill in the art at the time of invention to modify the method of Higashijima by providing fluorescent transgenic fish as novelty item to ornamental fish market as described by Bryan. Higashijima et al had already disclosed a method for making fluorescence transgenic fish displaying green fluorescence in the muscle of the fish. In addition, Bryan et al had described that novelty items such as transgenic fish comprising fluorescent genes could be designed for entertainment, recreation and amusement including use of the item to attract attention (col. 8, lines 25-29). The skilled artisan would have been motivated to modify the

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method of Higashijima to distribute transgenic fish as suggested by Bryan as novelty item.

One who would have practiced the invention would have had reasonable expectation of successfully obtaining a transgenic fish comprising fluorescent gene and distributing in the market because Higashijima already taught a method for making fluorescent transgenic fish and Bryan had taught fluorescent transgenic fish could be made for entertainment, recreation and amusement including use of the item to attract attention. One of ordinary skill in art would have been motivated to combine the teaching Higashijima and Bryan because a fluorescent transgenic fish comprising one or more fluorescent gene operably linked to a promoter would have provided fluorescent fish that would have attracted attention upon distribution of fluorescent transgenic fish as a novelty item in a place of normal or ordinary uses of such an item (pet store or ornamental fish market) as taught by Bryan.

Therefore, the claimed invention would have been prima facie obvious to one of ordinary skill in the art at the time of the invention.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

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1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 1-16, 20-21, 29-32 and 35-41 are also provisionally rejected on the ground of non statutory double patenting over claims 7-20 of co pending Application No. 09/913, 898. This is a provisional double patenting rejection since the conflicting claims have not yet been patented. The subject matter claimed in the instant application is fully disclosed in the referenced co pending application and would be covered by any patent granted on that co pending application since the referenced co pending application and the instant application are claiming common subject matter, because both sets of claims encompass providing transgenic ornamental fish to the ornamental fish market. For example, claims 1-16, 20-21, 29-32 and 35-41 of instant application encompasses a method of providing transgenic fish to the ornamental fish market comprising one or more chimeric fluorescence gene under the control of a promoter such that transgenic fish expresses one or more fluorescence gene at sufficient level upon exposure to one or more light and distributing said fish to the ornamental fish market. Claims 2-15 limit the fluorescent gene to include plurality of gene. Claim 16 limit the promoter of claim 1 to include tissue specific promoter that is subsequently limited to include zebrafish muscle creatine kinase gene promoter and zebrafish myosin light chain 2-gene

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promoter. Claims 29-32 limit the method of claim 16 to include plurality of fluorescent gene under the control of tissue specific promoter. Claims 36-41 are directed to the method of claim 1 to include stable transgenic fish line.

Whereas, Claim 7 of the Patent application no 09/913, 898 is directed to a transgenic fish comprising a zebrafish muscle creatine kinase or MLC2 gene promoter operably linked to fluorescent gene such that it expresses the fluorescent gene in tissue specific manner. Subsequent claims limit the transgenic fish of claim 7 to include promoter in germ cells and /or in somatic cell and that is capable of breeding with either transgenic fish or non transgenic fish to produce viable progeny and such progeny emit green fluorescence when the whole fish is exposed to plurality of light wavelength. Claim 19 define the transgenic fish of claim 10 to ornamental fish for ornamental fish market. Thus, claims 7-20 of US Patent application no 09/913898 broadly encompasses all the recited claims 1-16, 20-21, 29-32 and 35-41 of the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

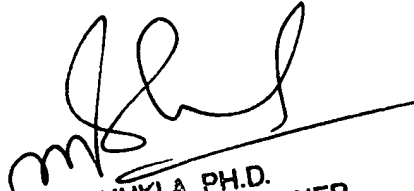
Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

16. No Claims allowed.

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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anoop Singh whose telephone number is (571) 272-3306. The examiner can normally be reached on 8:30AM-5:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272- 0735. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**RAM R. SHUKLA, PH.D.
SUPERVISORY PATENT EXAMINER**

Anoop Singh, Ph.D.
Examiner, AU 1632